2012 Resource Report for

Village of Northfield Electric Department

51 South Main Street
Northfield, VT 05663

Phone (802) 485-6121
Fax (802) 485-8426

Submitted to:

the Public Service Board of the State of Vermont
and
the Department of Public Service of the State of Vermont

on
February 28, 2012

by
the Vermont Public Power Supply Authority

on behalf of
Village of Northfield Electric Department

in fulfillment of
Vermont Public Service Board Rule 5.206(b)

1) Executive Summary

The Village of Northfield Electric Department (Northfield) submits the following report to the Vermont Public Service Board and the Department of Public Service in compliance with Rule 5.206 (B), *Reporting Power Supply Transactions*. The information contained within this report summarizes Northfield's power supply needs and acquisition strategy. This report also summarizes resource transactions the utility expects to enter during the next 5 years.

Northfield relies on the Vermont Public Power Supply Authority (VPPSA) for its interactions with the ISO-NE and New England power markets. In addition to managing resources in the New England markets, VPPSA also explores new generation sources for its members.

2) Utility Information

In 2011, Northfield's load requirements in the New England markets were 31,284,601 kWh. It reached a peak of 6,621 kw on 1/24/2011 at hour ending 18:00. Over the past several years, Northfield's load has fluctuated and is summarized in the following table.

Year	Load Obligation in New England Market (kwh)	Percent Increase (Decrease)
2007	31,105,015	
2008	31,184,520	0.25%
2009	30,570,240	-2.01%
2010	31,426,582	2.72%
2011	31,284,601	-0.45%

Northfield's energy needs are projected into the future based on past load trends, weather, and known customer changes. Updated load forecasts are completed regularly in an effort to refine Northfield's future energy need estimates. To follow is a summary of Northfield's forecasted energy requirements from 2012 to 2016.

Year	Load Obligation in New England Market (kwh)	Percent Increase (Decrease)
2012	31,198,906	-0.27%
2013	31,202,154	0.01%
2014	31,231,020	0.09%
2015	31,210,821	-0.06%
2016	31,501,353	0.92%

3) Market Conditions and New England Wholesale Price of Electricity

Wholesale Markets

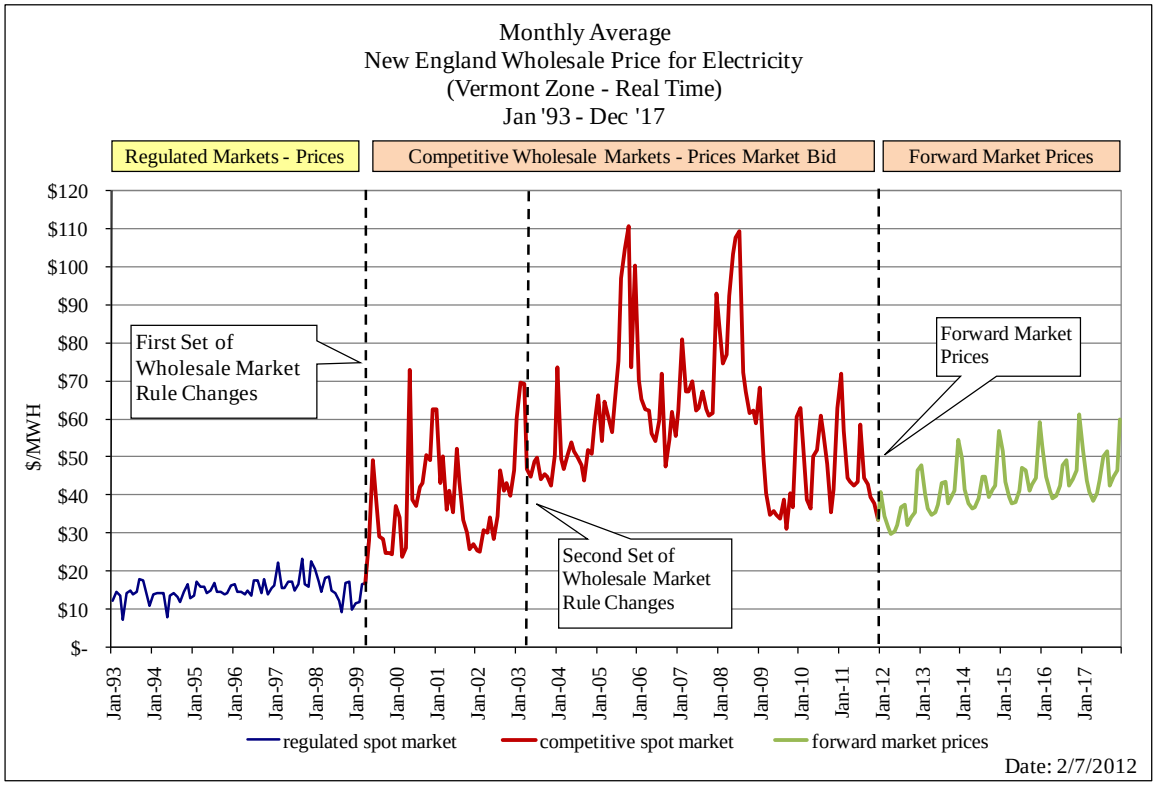
Wholesale electricity prices are often referred to as one of the most volatile of commodities. The New England wholesale energy market has become more volatile since the market has been restructured to a competitive market from a regulated market. Changes to the power market in 1999 included implementation of competitive bidding practices for electric power plants in the New England system. Prior to 1999 power plants were dispatched based on actual cost and settled on an ex-post basis. In May, 1999 the New England Wholesale Power Markets were restructured so that plants were dispatched and settled based on ex-ante bid prices in economic order from lowest bid to highest. Today competitive market forces are the basis for setting wholesale prices based on a balance between supply and demand.

In March, 2003 Standard Market Design ("SMD") was implemented in the New England wholesale markets This set of rules established various clearing points on the New England transmission system ("grid") in order to send accurate price signals regarding supply and demand at different locations throughout Vermont and New England. The market system helps identify areas with too little access to wholesale electricity in order to send a market signal for infrastructure investment through higher wholesale electric prices. The Independent System Operator of New England (ISO-NE) oversees the market rules implemented in 2003.

The following chart displays Vermont's real time wholesale monthly average energy costs over the last several years. Significant changes to market rules are identified by dashed vertical lines in the chart. After the implementation of new market rules, wholesale power

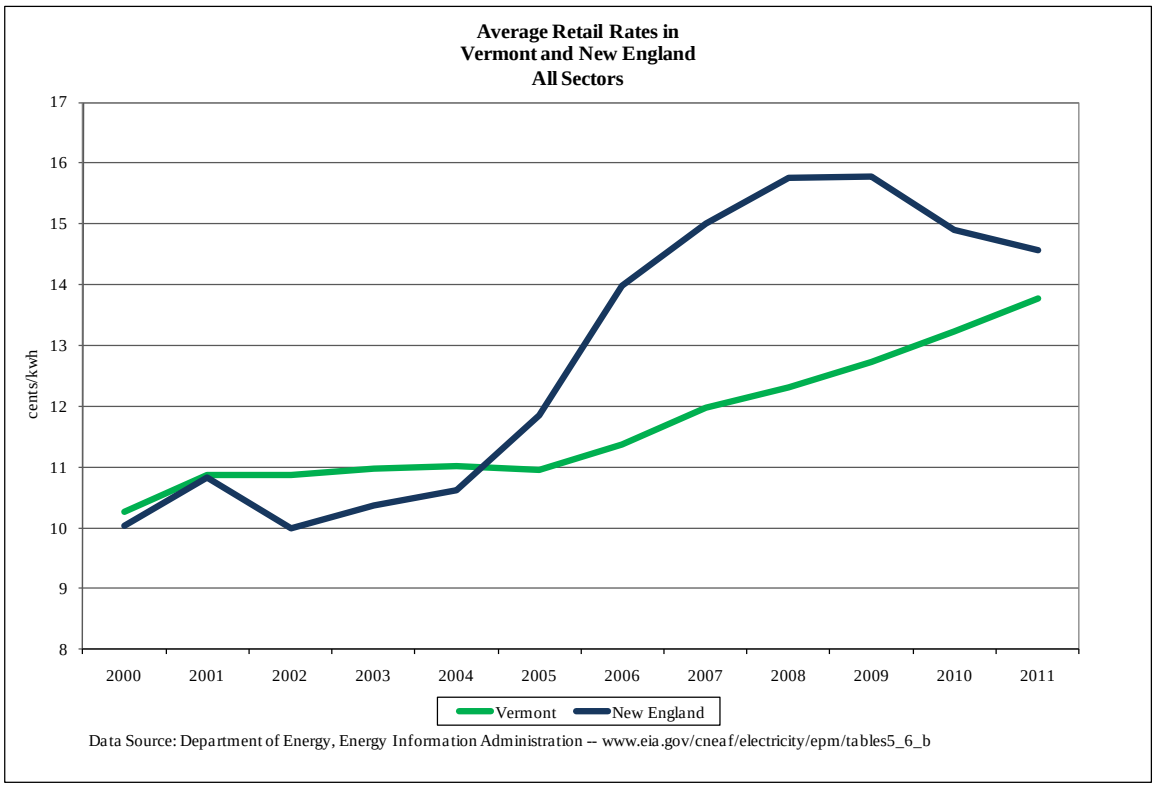
market prices experienced both substantial rises and falls resulting in considerable volatility. This has increased the need for long term stably priced power resources in utility power portfolios in order to reduce the effects of market swings.

Natural gas has historically been the fuel for marginal unit generators in the New England market and as a result the relationship between the price of natural gas and electrical power is strong. During 2011 gas and electricity prices have remained relatively low due largely to increased supply of natural gas in U.S. markets and ongoing effects of global economic recession. The "forward market prices" depicted below in the chart reflect a market view of continued low natural gas prices

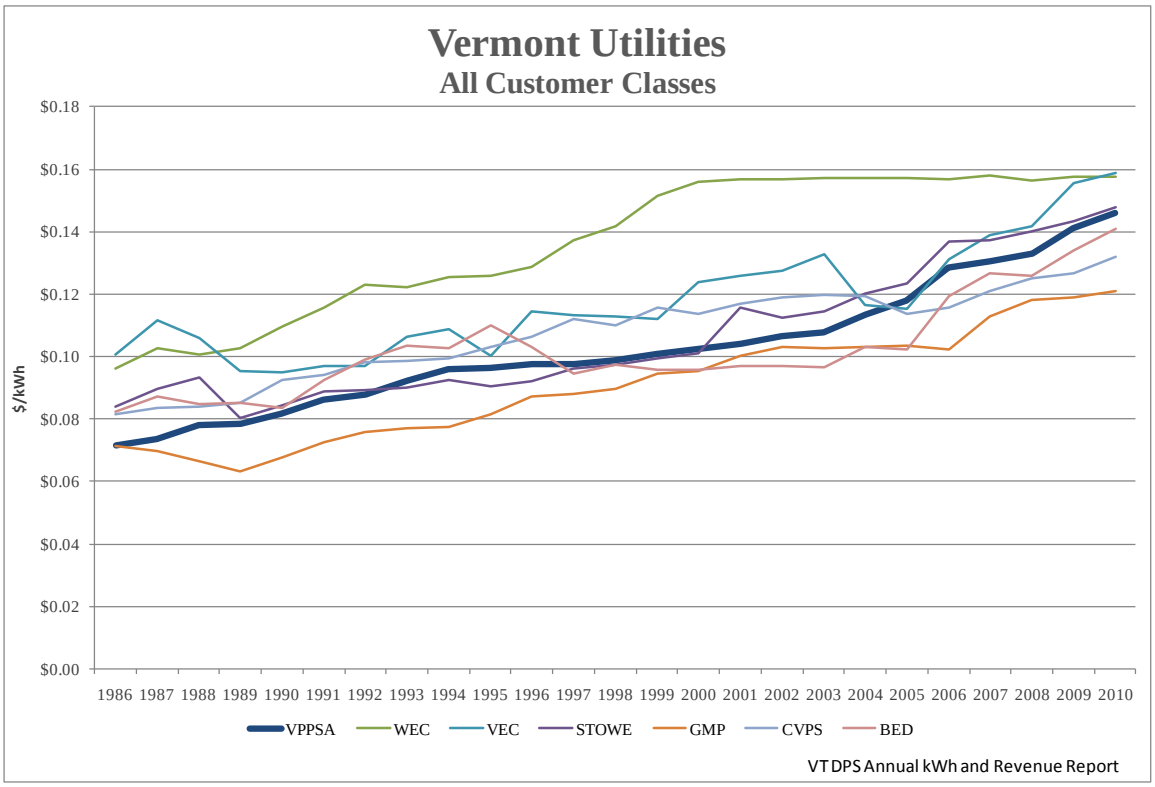


4) Retail Rates in the State of Vermont

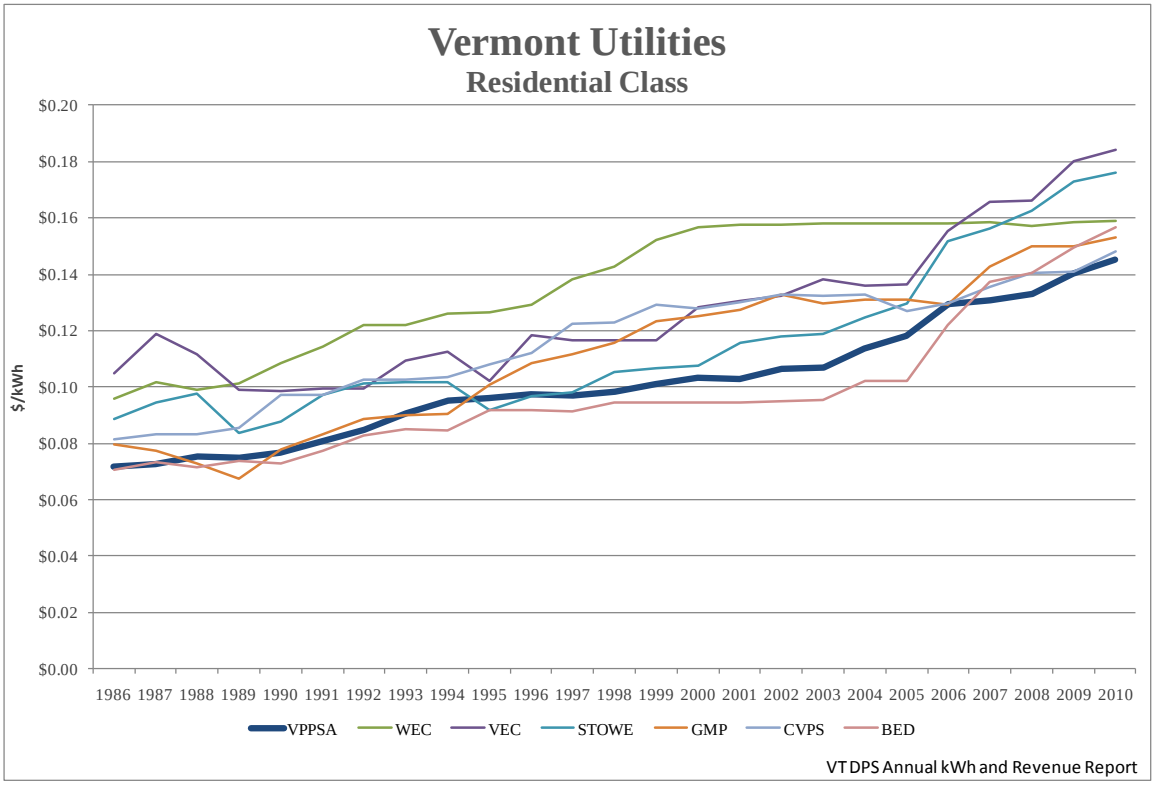
The State of Vermont's Average Retail rates as reported by the Department of Energy, Energy Information Administration (EIA) remain lower that that of the New England average. The following chart shows the average retail electric rates in Vermont compared to other New England states. Among the reasons for the gap since 2004 is Vermont's decision not to deregulate its electric industry. Customers in Vermont receive significant portions of their power from long term stably priced contracts whereas customers in the rest of New England are more exposed to wholesale market price changes.



The following chart shows a comparison between the VPPSA member systems and all other Vermont Utilities using data from the "KWh and Revenue Report" published annually by the Vermont Department of Public Service. This depicts total reported utility revenue from all classes divided by total reported kWh sales for all classes for the year ($/kWh). VPPSA member systems as an aggregate are in the middle of all utilities in the state as the fourth lowest rate out of seven utility groups.



The next chart is similar and shows a comparison for only the Residential class between the VPPSA member systems and all other Vermont Utilities using data from the "KWh and Revenue Report" published annually by the Vermont Department of Public Service. This depicts utility revenue from the Residential class divided by reported Residential class kWh sales for the year ($/kWh). VPPSA member systems as an aggregate are the lowest of all utilities in the state. In aggregate roughly half of VPPSA member systems kWh sales are from customers in the Residential class.



The following table ranks all Utilities in the state from highest Utility Annual Revenue per kWh sold by rate class to the lowest for 2010. The VPPSA member systems are listed individually and in aggregate at the bottom of the table. The data is from the "KWh and Revenue Report" published annually by the Vermont Department of Public Service.

Vermont Utility All Customer Class Revenues Annual Revenues/kWh Sales	
UTILITY	2010 ($/kWh)
HARDWICK	$0.1820
JACKSONVILLE	$0.1701
BARTON	$0.1695
HYDE PARK	$0.1678
READSBORO	$0.1648
JOHNSON	$0.1627
VEC	$0.1590
WEC	$0.1576
LUDLOW	$0.1507
MORRISVILLE	$0.1497
ENOSBURG FALLS	$0.1492
LYNDONVILLE	$0.1481
STOWE	$0.1477
BURLINGTON	$0.1409
ORLEANS	$0.1362
CVPS	$0.1321
NORTHFIELD	$0.1311
GMP	$0.1208
SWANTON	$0.1073
ALL UTILITIES	$0.1306
VPPSA	$0.1461

Vermont Utility Total Residential Class Revenues Annual Revenues/kWh Sales	
UTILITY	2010 ($/kWh)
VEC	$0.1844
HARDWICK	$0.1818
STOWE	$0.1759
JACKSONVILLE	$0.1707
BARTON	$0.1677
HYDE PARK	$0.1642
READSBORO	$0.1617
JOHNSON	$0.1611
WEC	$0.1590
BURLINGTON	$0.1568
ENOSBURG FALLS	$0.1530
GMP	$0.1530
MORRISVILLE	$0.1495
CVPS	$0.1482
LYNDONVILLE	$0.1441
NORTHFIELD	$0.1338
LUDLOW	$0.1324
ORLEANS	$0.1226
SWANTON	$0.1026
ALL UTILITIES	$0.1538
VPPSA	$0.1452

Vermont Utility Total Commercial and Industrial Class Annual Revenues/kWh Sales	
UTILITY	2010 ($/kWh)
READSBORO	$0.1815
HARDWICK	$0.1806
HYDE PARK	$0.1776
BARTON	$0.1715
JACKSONVILLE	$0.1679
JOHNSON	$0.1621
LUDLOW	$0.1590
LYNDONVILLE	$0.1507
MORRISVILLE	$0.1491
WEC	$0.1454
ENOSBURG FALLS	$0.1441
ORLEANS	$0.1432
STOWE	$0.1358
BURLINGTON	$0.1350
VEC	$0.1299
NORTHFIELD	$0.1274
CVPS	$0.1182
SWANTON	$0.1107
GMP	$0.1065
ALL UTILITIES	$0.1155
VPPSA	$0.1460

Many Utilities in Vermont have dramatically different customer class percentages within their system resulting in significant variations in system load shape. This class breakdown is largely responsible for the discrepancies that can be seen in the prior tables. Many VPPSA systems have a large percentage of Residential class customers. Commercial and Industrial class customers often use substantially more power compared to their peak need than Residential class customers and as a result may be charged a demand charge and a lower $/kWh rate than a Residential customer. The table below lists the class percentage of total sales by system. The VPPSA member systems are listed individually and in aggregate at the bottom of the table. The data is from the "kWh and Revenue Report" published annually by the Vermont Department of Public Service. .

Vermont Utility Total Residential Class Residential Class kWh Sales /Total	
UTILITY	2010 (%)
WEC	90%
HARDWICK	73%
HYDE PARK	73%
BARTON	72%
READSBORO	71%
JACKSONVILLE	70%
VEC	52%
ENOSBURG FALLS	51%
SWANTON	49%
LYNDONVILLE	47%
MORRISVILLE	46%
CVPS	45%
NORTHFIELD	36%
JOHNSON	34%
LUDLOW	33%
ORLEANS	33%
GMP	30%
STOWE	29%
BURLINGTON	24%
ALL UTILITIES	38%
VPPSA	48%

Vermont Utility Total Commercial and Industrial Class C&I Class kWh Sales /Total	
UTILITY	2010 (%)
BURLINGTON	74%
STOWE	70%
GMP	70%
LUDLOW	66%
ORLEANS	63%
JOHNSON	62%
NORTHFIELD	56%
CVPS	55%
MORRISVILLE	54%
LYNDONVILLE	52%
SWANTON	48%
VEC	46%
ENOSBURG FALLS	44%
JACKSONVILLE	29%
HARDWICK	26%
READSBORO	25%
HYDE PARK	22%
BARTON	21%
WEC	10%
ALL UTILITIES	61%
VPPSA	49%

4) Existing Resources

Northfield's power supply portfolio is made up of generation resources, long-term contracts, and short-term contracts. The diversified portfolio acts as means to financially hedge

the cost of serving load at the Vermont Zone in the ISO-NE market system. Northfield's current supply mix is summarized in the following table, including a brief description of each resource.

Resource	2011 Max Qualified Capacity	2011 Kwh	Type	Description	Fuel	Location	Expiration
McNeil	1,070	4,509,759	On Peak	Wood Unit	Wood	Essex Node	Life of Unit
NYPA	231	1,547,291	ATC	Block Power	Hydro	Roseton Interface	Varies
VEPPI	257	1,687,064	ATC	PURPA Units	Wood/Hydro	Various VT nodes	Varies
Hydro Quebec	1,592	9,983,070	Dispatchable	Dispatched	Hydro	HQHighgate120	2012 - 2020
Standard Offer	5	105,446	Varies	In-State Renewable	Various Renewable	Varies	Varies
Market Contracts	N/A	7,506,074	Daily	ISO-NE bilateral	System Mix	Mass hub	Varies from 2009-2017

McNeil

The McNeil wood-fired generating facility is located in Burlington, Vermont. The facility has a maximum generating capability of 54 MW. Northfield's entitlement to McNeil is provided through an agreement with the Vermont Public Power Supply Authority for the life of the power plant. Northfield expects the generation to be mostly composed of wood, but natural gas is used periodically as an alternate fuel source and for start up. Oil is also available and is used primarily as a start up fuel source.

New York Power Authority (NYPA)

The New York Power Authority provides inexpensive, hydroelectric power to the utilities in Vermont under two contracts. The first contract is a 1,000 kW entitlement to the Robert Moses Project (a.k.a. "St. Lawrence") located in Massena, New York. The second contract, known as the "Niagara Contract," is for a 14,300 kW entitlement to the Niagara Project located at Niagara Falls, New York. The contract for St. Lawrence has been extended through April 30, 2017. The Niagara Contract has been extended through August 31, 2025.

Vermont Electric Power Producers, Inc. (VEPPI)

Northfield receives power from several independent power projects (IPP) through a state mandated arrangement administered by the Rule 4.100 appointed purchasing agent. All current IPP generation resources in Vermont are hydro with one exception for a wood fired biomass generator. Vermont Electric Power Producers, Inc. (VEPPI) assigns power to all Vermont utilities under Vermont Public Service Board (PSB) Rule 4.100 based on a pro-rata share of electric sales which is updated annually. Contracts between VEPPI and its constituent power producers began to terminate in 2008. The last VEPPI contract is scheduled to end in 2020.

Hydro-Quebec/Vermont Joint Owners' (VJO) Contract

Northfield's entitlement in HQ/VJO contract is 1,592 kw. Northfield's entitlements are summarized as follows:

HQ Schedule	Entitlement (kW)	End Date
B	1,198	2015
C1	246	2012
C2	66	2012
C3	2	2015

During the term of the contract the VJO were permitted to reduce/increase the annual capacity factor between 70% and 80% on five occasions. Hydro-Quebec was allowed to implement three reductions. The VJO and HQ have utilized all options to increase or decrease allowances of the HQ contract. HQ's annual energy deliveries are set at a 75% capacity factor starting in the contract year November 1, 2007 and will stay at that level for the remainder of the contract. Under the terms of the contract monthly capacity factors can range from 25% to 95%. However, in order to comply with ISO-NE's SMD rules the monthly capacity factor, for practical purposes, cannot be less than 47%, on average.

Standard Offer

Northfield receives power from several independent power producers according to the state mandate set forth in the Vermont Energy Act of 2009 (i.e. Act 45) which is administered by the SPEED facilitator. The prices paid to developers under Act 45 are standardized based on the type of renewable energy technology. Northfield receives a share of all Standard Offer contracts based on its pro rata share of Vermont's prior year kWh sales. Duration of standard offer

contracts is permitted to be between 10 and 20 years, except in the case of solar which is permitted to contract for 25 years.

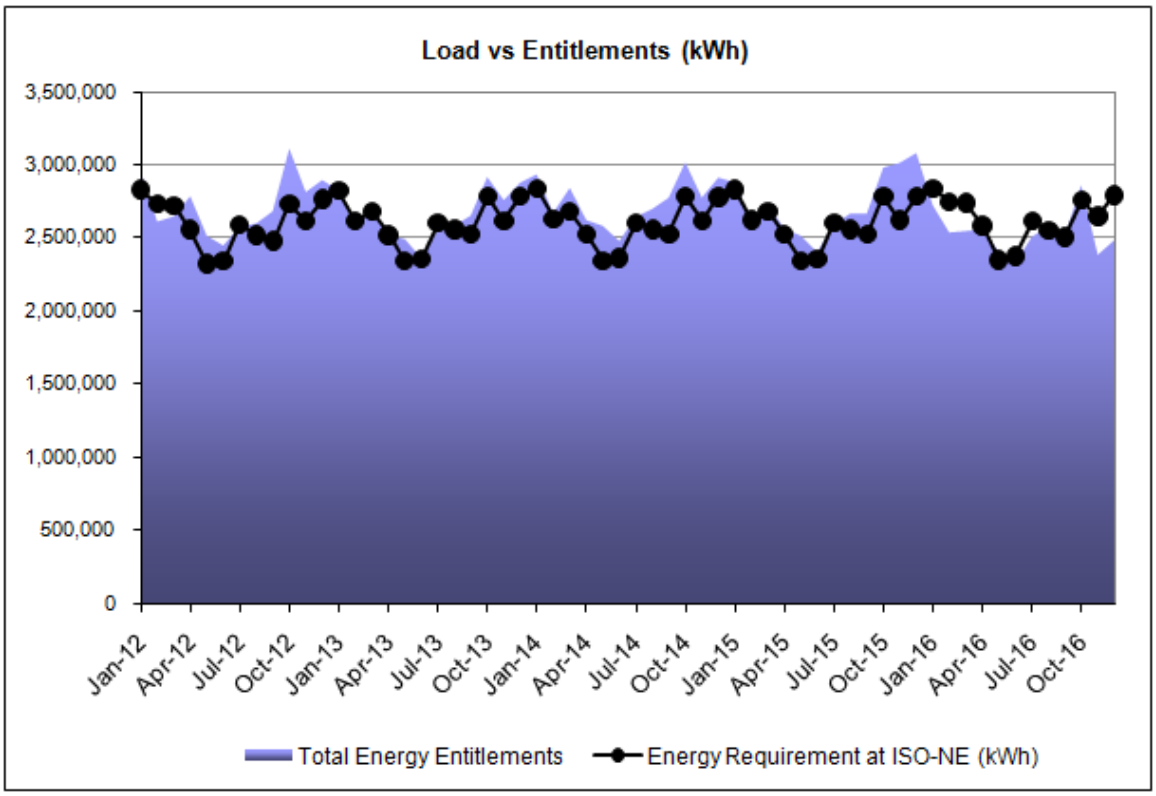
Market Purchases

Northfield meets the remainder of its load obligations through ISO-NE's day-ahead and real-time energy markets, physical bilateral transactions and financial transactions. Northfield automatically participates in the wholesale markets through its ISO-NE settlement. Through VPPSA short-term transactions are made periodically to adjust the portfolio in an effort to match resources to Northfield's load obligations. Market purchases range in size, duration, and by provider and can be transacted in small amounts. It should be noted that if purchases are longer than five years the transaction requires Vermont Public Service Board approval. At this time all market purchase contracts have been less than five years in duration.

5) Market Position

Energy

Presented below is a graph of Northfield's projected energy resources, available from existing contracts and generating plants, from 2012 through 2015. On the same graph is a forecast of load that Northfield expects to serve over the same period. It should be noted that energy is the largest component of a utility's power costs. Below the chart is a summary of major milestones that occur related to Northfield's sources of power.



Major Energy Milestones

- Market Contracts expiring in the first one to five years
- HQ C1 and HQ C2 expiring in 2012
- HQ B and HQ C3 expiring in 2015
- Fitchburg Landfill Gas contract starting in 2012 - 306kW

Note the relationship between forecasted energy needs and Northfield's power supply resources. Gaps represent an under (or over) commitment of power resources as compared to projected load. As supply falls below load Northfield will acquire new resources that meet the utility's decision making criteria. VPPSA continually evaluates power markets on Northfield's behalf for economical methods to address future energy needs.

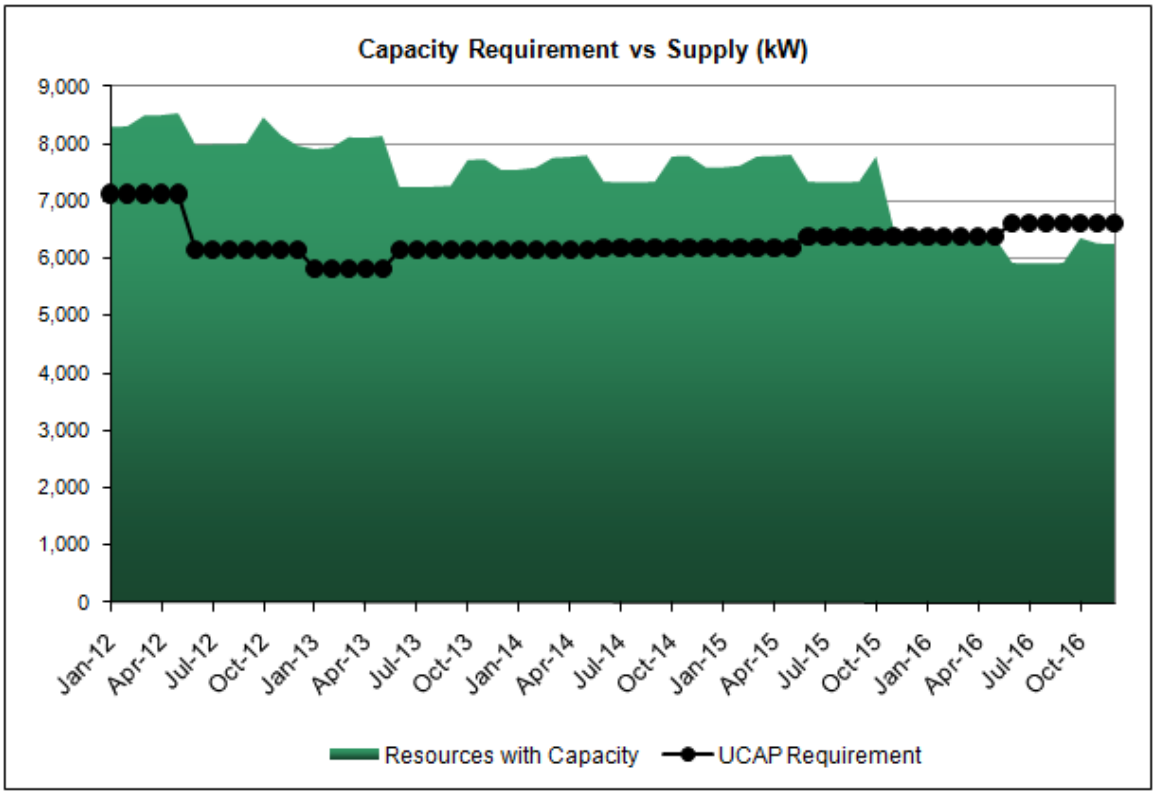
6) Capacity Position

Capacity

Capacity is the second largest cost driver in a utility's power costs. Capacity represents the capability to generate electricity. In broad terms capacity is important in providing reliability and avoiding price spikes during peak demand periods.

The graph below shows the utility's capacity available from existing resources compared to its projected capacity requirements as a participant in ISO-NE wholesale markets.

Northfield voted to participate in the Swanton peaking facility (Project 10) which came into service in 2010. Northfield's capacity graph shows Northfield's capacity obligations and resources including the peaking facility. Below the chart is a summary of major milestones that occur related to Northfield's sources of power.



Major Capacity Milestones

- Addition of Project 10 in 2010 - 4,701 kW
- HQ Schedules C1 and C2 expiring in 2012 - 312 kW
- HQ Schedule B expiring in 2015 - 1,198 kW
- Fitchburg Landfill Gas contract starts 2012 - 382kW

Forward Capacity Market

The Forward Capacity Market is a new market for capacity that began in June 2010. Northfield's generation will be credited the auction clearing price for the commitment period. Conversely Northfield will be charged based on its load obligation coincident to New England's

peak. Historically the price of capacity was set by a FERC approved agreement and ranged from $3.05 per kW per month in December 2006 to $4.10 by May 2010. After that time an auction process set the price. The first auction took place in February, 2008. The results from this auction set a new price for capacity for the period June, 2010 to May, 2011 (capacity cleared at $4.50 kw-mo in the first auction). Subsequent auctions have been held for capacity periods through 2015. The table below summarizes clearing prices obtained in the auction process.

Auction	Clearing Price
FCA #1 (2010-11)	$4.25 kW-mo.
FCA #2 (2011-12)	$3.12 kW-mo.
FCA #3 (2012-13)	$2.54 kW-mo.
FCA #4 (2013-14)	$2.52 kW-mo.
FCA #5 (2014-15)	$2.86 kw-mo.

8) Five Year Budget Projections

Each year VPPSA produces a five year budget outlook on power supply costs for all VPPSA systems. The five year budget is used as a guide for what is expected in the upcoming years. This outlook allows for future planning in years where current rates may not support expected power supply costs. The detailed power supply budget depends on many different projections and encompasses all known costs associated with power supply for Northfield, including capacity, energy and transmission. Power supply costs associated with internal generation are not included in the analysis as those costs are typically listed in the general budget of the Utility.

Village of Northfield Electric Dept (Power Supply Costs / Real Time Load Obligation)	2009 Actual	2010 Actual	2011 Actual	2012 Budget	2013 Budget	2014 Budget	2015 Budget	2016 Budget
$/kWh	$0.114	$0.110	$0.106	$0.108	$0.113	$0.119	$0.116	$0.110
% increase (y/y)	N/A	-3.4%	-3.6%	2.3%	4.1%	5.2%	-1.9%	-5.7%

7) Future Long-Term Resources

Future Resources

VPPSA assists Northfield in seeking resources to replace existing long-term resources. At this time VPPSA has negotiated for the purchase of output from several power projects that are in the planning and development stages as well as for other long term contractual opportunities. To follow is a summary of long term sources of power.

Project 10

Northfield held a municipal vote to authorize the execution of a Power Sales Agreement (PSA) with the Vermont Public Power Supply Authority for 12.00% of the output from a 40 MW peaking facility constructed in Swanton, Vermont. Eleven municipal utilities have signed Purchase Sales Agreements for the project which came online in 2010.

The project constructed 40 MW of peaking generating capacity. This generating capacity is designed to provide reliability services to the participating municipal utilities at prices below projected market prices for the Forward Capacity Market, Forward Reserve Markets, and Black Start. In addition, the units will run during peak price times to mitigate price spikes that occur when New England loads reach peak levels in the summer and winter. The Power Sales Agreement was filed with the Vermont PSB for Rule 5.200 notice in February, 2007.

Hydro Quebec

Negotiations with Hydro Quebec began in early 2008 and have continued intermittently for a new contract to begin when the existing contracts with Vermont utilities start to expire. At this time Hydro Quebec and VPPSA have negotiated a Power Purchase Agreement in place, however the amount of energy to be delivered has not been finalized. The Public Service Board heard testimony in docket No. 7670 on the contract and approved its use by the Vermont utilities by issuing a certificate of public good in a board order on April 15, 2011. The goal of this long-term resource option is to reduce future price volatility and market uncertainty by reducing reliance on short duration market purchases.

Fitchburg Landfill Methane

Beginning in 2012 nine municipal utilities will begin receiving energy, capacity and renewable energy credits (RECs) from the landfill gas-fired generator at the City of Fitchburg

landfill located in Westminster, MA. This resource provides constant, base-load renewable power at a stable price for the 20 year duration of the contract.

Seabrook Nuclear Generation

Negotiations are underway for the purchase of energy and capacity from the Seabrook Nuclear power plant in Seabrook, NH. The 20 year contract includes varying amounts of energy and capacity over the life of the deal and employs a known price escalating mechanism. This contract will provide base load energy at predictable prices, helping to eliminate exposure to economic volatility.

8) Anticipated Resource Transactions

Planned Purchasing

In order to make its members' power costs more predictable, VPPSA implemented a plan to purchase power using a systematic power purchasing technique. In order to avoid uncertainty and volatile swings of frequent market purchases, Northfield currently participates in the Planned Purchasing structure through its membership in VPPSA. Under the Planned Purchasing approach, VPPSA reviews Northfield's future market exposure (defined as its forecasted need for power, less amounts available through previously secured long-term contracts and generation) every six months.

Periodically, Northfield has the opportunity to purchase a portion of its energy needs for future periods. By staggering the purchases, at any given point the market needs of Northfield are met by contracts purchased at different times resulting in less volatile power market prices. This is very similar to the concept of dollar cost averaging which is used in investing. As a result from contracting in even intervals Northfield's outstanding power portfolio needs are filled with a laddering effect. Contracts are small and layered at different intervals of time. This approach is beneficial because the utility will not have large breaks in coverage in the future.

The implementation of Planned Purchasing is structured and systematic but it does not remove the need for continual market monitoring and judgment. The goal is to use market monitoring and judgment to give the municipal systems the benefit of more favorable resource prices. In the event that market prices are below that which would cause rate pressure or longer

purchase may be made instead of the normal duration. In the event that unusually high prices prevail at the time of a planned purchase the purchase may be delayed. In general this approach deters attempts to 'time the market.'

The following table is a summary of anticipated resource transactions for 2012 through 2016:

Transaction	Volume	Term	Product	Explanation
McNeil Outage	0-1 mW	Up to 1 month	Energy	Purchases and/or sales to hedge load exposure during maintenance outage at prevailing market prices
HQ Outage	0-2 mW	Up to 1 month	Energy	Purchases and/or sales to hedge load exposure during Highgate Converter outage at prevailing market prices
HQ Contract	0-2 mW	26 Years	7x16 Energy	Replacement of current HQ contract; long term, market following contract helps mitigate the effect of short-term market volatility
Daily Transactions	0-5 mW	1-3 Days	Energy	Daily load bidding and incremental supply offers
Weekly Transactions	0-4 mW	1-2 Weeks	Energy	Optimizing / hedging purchases and/or sales at prevailing market prices
Monthly / Season Transactions	0-4 mW	1-3 Months	Energy	Optimizing / hedging purchases and/or sales at prevailing market prices
Planned Purchasing	0-3 mW	2-5 Years	Off Peak Period Energy	Prevailing market price purchases and/or sales to hedge long-term energy needs not met by long term resources
Planned Purchasing	0-3 mW	2-5 Years	Peak Period Energy	Prevailing market price purchases and/or sales to hedge long-term energy needs not met by long term resources
Financial Transmission Rights	0-7 mW	Monthly and one year	FTR	Purchases and/or sales of FTR's to minimize congestion exposure or provide revenues to offset congestion charges
Capacity	Excess or short position	Monthly	Capacity	Excess or deficient capacity obligations will be settled at monthly Reconfiguration auction or through bilateral contracts.
Phase 1	0-2 mW	Up to 1 Year	Transmis sion	Short-term purchases and/or sales of unused transmission space to reduce costs
Renewable Energy Credits	Variable	Up to 5 Years	REC's	Purchases and/or sales of Renewable Energy Credits (RECs) to minimize generation costs
Financial Options	See Above	See Above	See Above	Financial options may be substituted for any of the above physical products
Reserve	0-5 mW	See Above	Reserve	Participate in seasonal auctions and bilateral coverage for outage
Capacity	0-5 mW	See Above	Capacity	Participate in annual forward Capacity Auction